patients with signs of vascular injury had injury confirmed by angiography. Using angiography as the gold standard in the 59 patients, the overall sensitivity of physical examination to detect vascular injury in stable patients with gunshot wounds to the neck was 57%. Specificity was 53%, with positive and negative predictive values of 43% and 66%.

Comment: In recent years, there has been a trend towards more conservative use of catheter-based angiography in patients with possible vascular injury. This trend has been most marked in the evaluation of patients with posterior knee dislocation and in the evaluation of stable patients with penetrating trauma to an extremity. The current data, however, suggest that hemodynamically stable patients with gunshot wounds to the neck should still undergo routine imaging evaluation. In some centers, this may be duplex scanning or computed tomography angiography rather than a catheter-based angiogram.

Aortic calcification and the risk of osteoporosis and fractures

Schulz E, Arfai K, Liu X, et al. J Clin Endocrinol Metab 2004;89:4246-53.

Conclusion: Aortic calcification is a strong predictor of low bone density and fragility fractures in postmenopausal women.

Summary: The authors investigated the relationship between computed tomography (CT) assessment of aortic calcification and bone density values and fragility fractures in 2348 healthy postmenopausal women. They also sought to determine whether vascular calcification and bone loss progressed in parallel by varied measurements obtained 9 months to 8 years later in 228 of the women.

Of the 2,348 women enrolled, 70% had osteoporosis and 30% had at least one vertebral fracture, with 9% having had at least one hip fracture. Aortic calcifications were related inversely to bone density and directly to fragility fractures. Adjusting for compounding variables, measurements of aortic calcification predicted 26.1% of variance in bone density ($P < .001$). The odds ratio for vertebral fracture in women with aortic calcification versus those without aortic calcification was 4.8 (95% confidence interval [CI], 3.6 to 6.5). The odds ratio for hip fracture in women with aortic calcification versus those without aortic calcification was 2.9 (95% CI, 1.8 to 4.8).

In the 228 women studied longitudinally, the percentage of yearly increase in aortic calcification accounted for 47% of the variance in the percentage rate of bone loss ($P < .001$). Women in the highest quartile for increases in aortic calcification had four times greater bone loss per year (5.3% vs 1.3%, $P < 0.001$) than age-matched women in the lowest quartile of aortic calcification.

Comment: Aortic calcification is a risk factor for cardiovascular disease. Previous studies have suggested that women with osteoporosis are at increased risk of mortality due to stroke or coronary disease (Am J Med 1999;106:273-8). This study suggests a relationship between atherosclerosis and osteoporosis and at least partially implies a shared mechanism for mineral deposition in connective tissue. Effective treatment strategies for either osteoporosis or atherosclerosis may modify the risk of both of these common conditions.

A randomized comparison of radial-artery and saphenous-vein coronary artery bypass grafts

Desai ND, Cohen EA, Naylor CD, et al. New Engl J Med 2004;351: 2302-9.

Conclusions: In coronary artery bypass grafting, radial artery grafts have lower rates of graft occlusion at 1 year than saphenous vein grafts. The patency of radial artery grafts is greater when grafted to native vessels with more severe stenosis.

Summary: The authors studied the relative patency of radial artery and saphenous vein grafts in coronary artery bypass grafting. This was a randomized trial with control for bias in selection of patients and vessels. There were 561 patients enrolled at 13 centers. The anterior coronary circulation was bypassed with a left internal thoracic artery bypass graft. Radial artery grafts were randomly assigned to bypass the major vessel in either the circumflex (lateral) territory or right coronary (inferior) territory. Saphenous vein grafts were used for the opposite territory and served as controls. Coronary angiography was performed at 8 to 12 months postoperatively. The primary end point was graft occlusion.

At 1 year, angiography was performed in 440 patients revealing that 13.6% of saphenous vein grafts and 8.2% of radial artery grafts were occluded ($P = .009$). Diffuse narrowing of radial artery grafts was present in 7%. Diffuse narrowing of saphenous vein grafts was present in 0.9% ($P = .001$). The rate of angiographic string sign and occlusion of radial artery grafts was lower when the stenosis in the target coronary vessel lesion exceeded 90% compared with when the target vessel coronary lesion was between 70% and 89% (3.7% vs 12.4%, $P < .001$). At 1 month after radial artery harvest, 5.7% of patients reported moderate-to-severe thenar paresthesia or numbness. This decreased to 1.1% at 12 months. Ten patients (1.8%) reported moderate-to-severe weakness in the hand at 1 month, and this decreased to 0.9% at 12 months. There were no reports of significant hand ischemia. The patency of the saphenous vein or radial artery grafts did not depend on the vessel bypassed.

Comment: This is the best study available evaluating the relative efficacy of radial artery and saphenous vein grafts in coronary revascularization. It is interesting that despite the good performance of radial artery grafts, there was a decrement in their performance when they were used to bypass less severe stenoses in the coronary circulation. The data strongly suggest that radial artery grafts are superior to saphenous vein grafts for coronary artery revascularization of target vessels with very high-grade stenosis.

An analysis of 124 surgically managed brachial artery injuries

Zellweger R, Hess F, Nicol A, et al. Am J Surg 2004;118:240-45.

Conclusions: Critical limb ischemia after brachial artery injury is rare. Primary repair of brachial artery injuries is possible in only one third of patients. Two thirds of patients have associated nerve injury.

Summary: This was a 3-year review of surgically managed brachial artery injuries. Patients were derived from a single trauma institution in Cape Town, South Africa. Data were obtained from medical records and analyzed for demographics, mechanism of injury, associated injuries, treatment, and outcome.

There were 113 males and 11 females with brachial artery injuries. The mean age was 28.7 years. Most injuries were penetrating injuries, with 57% caused by stab wounds and 29% secondary to gunshot wounds. Primary anastomosis was possible in 47 patients. Seventy-three patients required vein interposition grafting. Forearm fasciotomy was required in 12.1% of patients ($n = 15$). Associated injuries included peripheral nerve injuries in 62.1%, brachial vein injuries in 13.7%, and humerus fracture in 9.7%. Thirty-nine patients (31.5%) had other remote injuries.

Comment: The article highlights the fact that associated nerve injuries are common with brachial artery injury and that primary repair is possible in only a minority of patients.